A photograph of a backyard scene. In the foreground, there is a wooden deck. Behind it, a large area of tall, green grass. In the background, a clothesline with several items of laundry hanging on it. The sky is blue with some clouds. The text "Science in your backyard (or the playground, or in your car)" is overlaid on the image in a white box.

Science in your backyard (or the playground, or in your car)

- Peggy LeMone
Globe Chief Scientist

Tools: Not much! *Maybe...*

- Pencil
- Paper
- Ruler
- Your eyes
- Curiosity
- Tools for GLOBE Protocols

Measuring Temperature with Crickets

Temperature in Fahrenheit

- Count number of chirps in 15 seconds
- Add 37



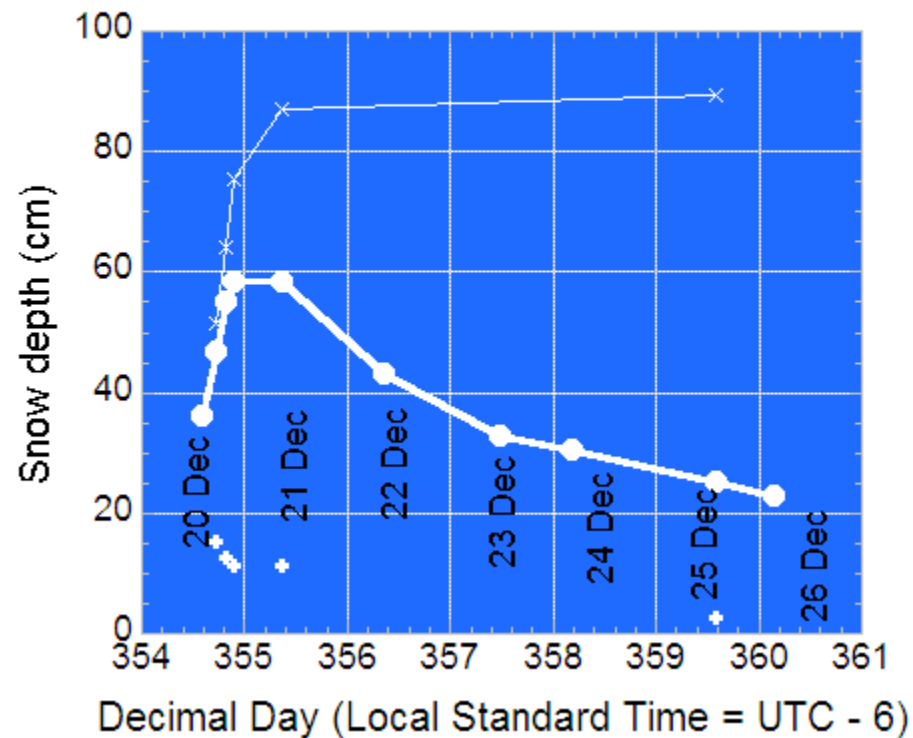
(Crickets chirp by rubbing wings Together)

If you have a thermometer, check to see how accurate crickets are near you!


Measuring Snow (from Chief Scientist's Blog)

It took several days to take these measurements.

Notice how the snow “settles” – so five inches more snow doesn’t mean a snow pack that is five inches deeper!



See precipitation protocol: www.globe.gov/tctg/precip.pdf?sectionId=12



Melting snow:
why is the snow melted more along
the lines?

Watch to see how land cover affects snowmelt (given same shadows)



Rock-covered lawn

Lawn with thin grass



Lawn with thick grass

How long does a cloud live?

*Cumulus clouds –
Saturday 10 a.m. MDT
12 May 2007*



*Cumulus clouds
(now Cumulonimbus)
10:45 a.m. MDT 12 May 2007*

www.globe.gov/tctg/clouds.pdf?sectionId=8&rg=n&lang=en

http://gpdi.globe.gov/advance/cloud/GLOBE-Clouds24_content.html

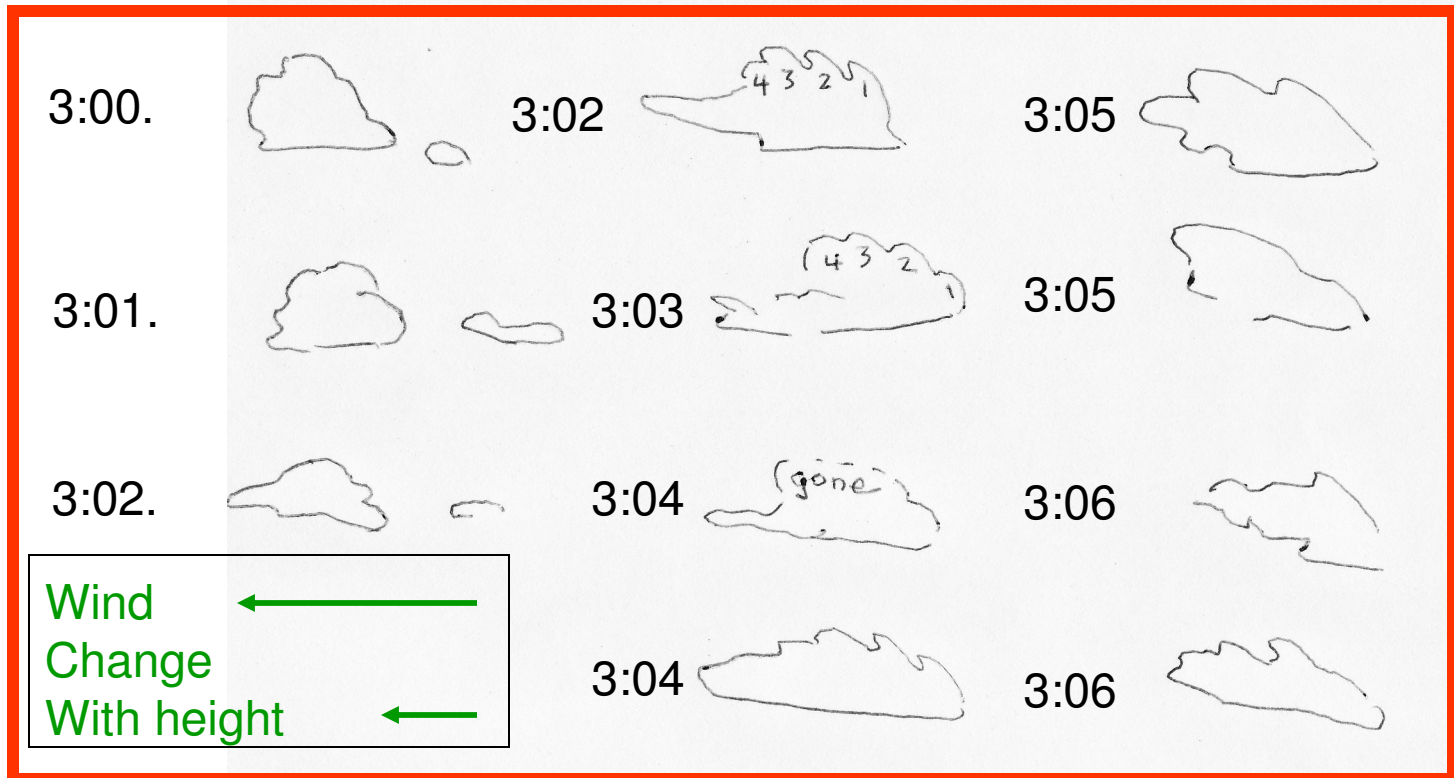
Not all Cumulus become Cumulonimbus.

How long does an average fair-weather Cumulus cloud last?

How do clouds change with time?

Numbers on clouds at 3:02 and 3:03 p.m. show waves forming on the top of the cloud.

The waves mixed out and then reformed around 3:04 p.m.

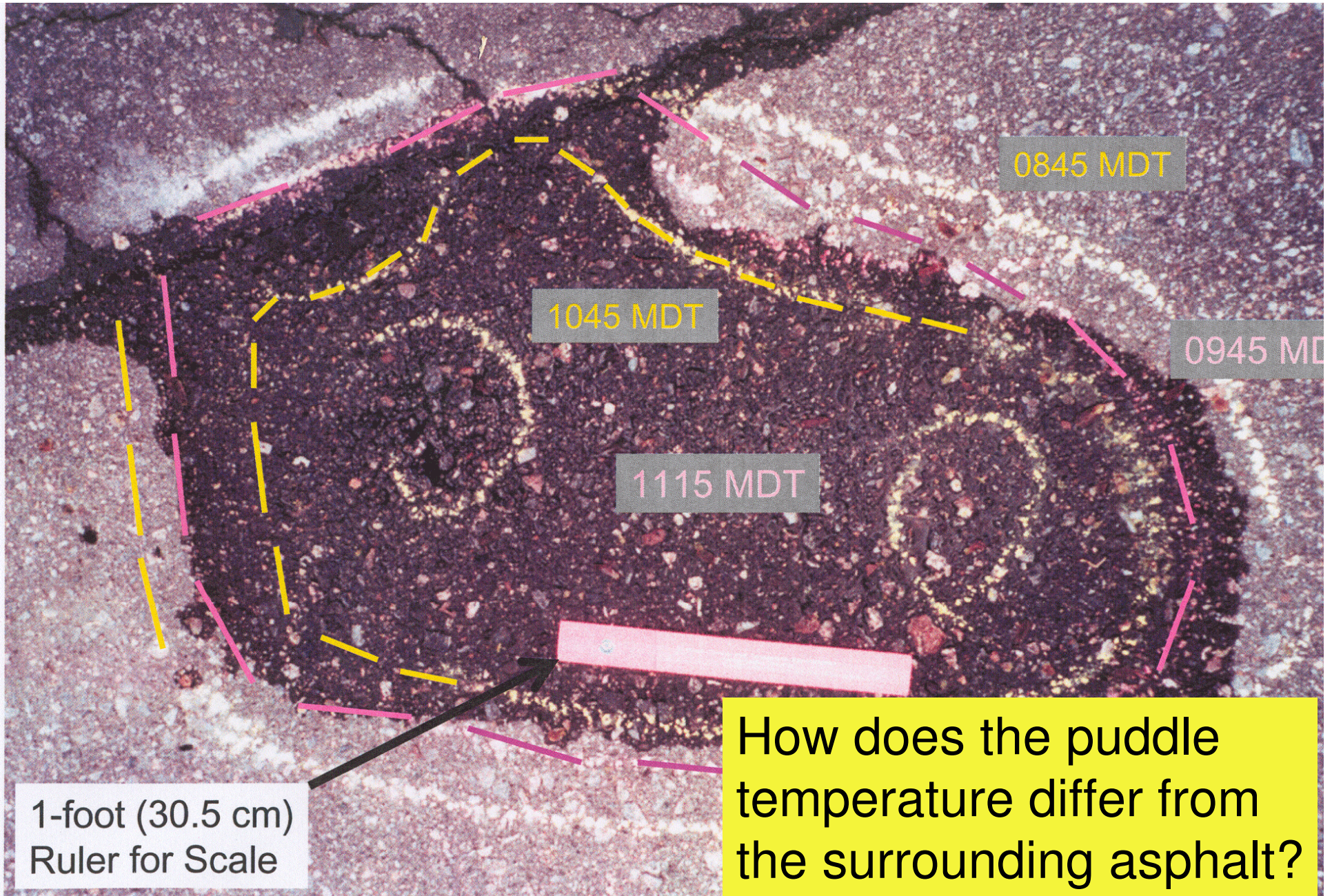


Sketches of a pair of clouds in Wyoming 1 July 2002. Times are Hours after noon Mountain Daylight Time. The larger cloud lasted another 3 minutes.

Dying →

Flat base → growing



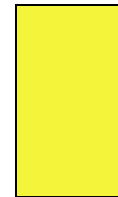
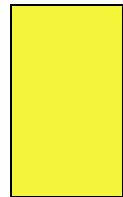
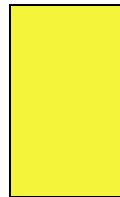


How fast does a puddle dry out?

How much does rain vary from place to place?

Put identical containers in **your** back yard

- Use Rain gauge, or
- Use containers with sides straight up and down (e.g., frozen juice can)
- If you don't have containers with straight sides you can't get the absolute amount, but you can still find out which areas got more rain.



Or compare results with other nearby schools, or your friends
But at least use gages or identical containers!

Make sure rain “gauges” are well-exposed (away from trees and buildings – see GLOBE precipitation protocol)

RAINFALL DOES VARY

Radar image to right shows how rain rate varies across Florida...

Table from AccuWeather

Light Blue – < 0.004 in/hr

Dark Blue ~ 0.01 in/hr

Middle Green ~0.08 in/hr

Yellow 0.4 in/hr

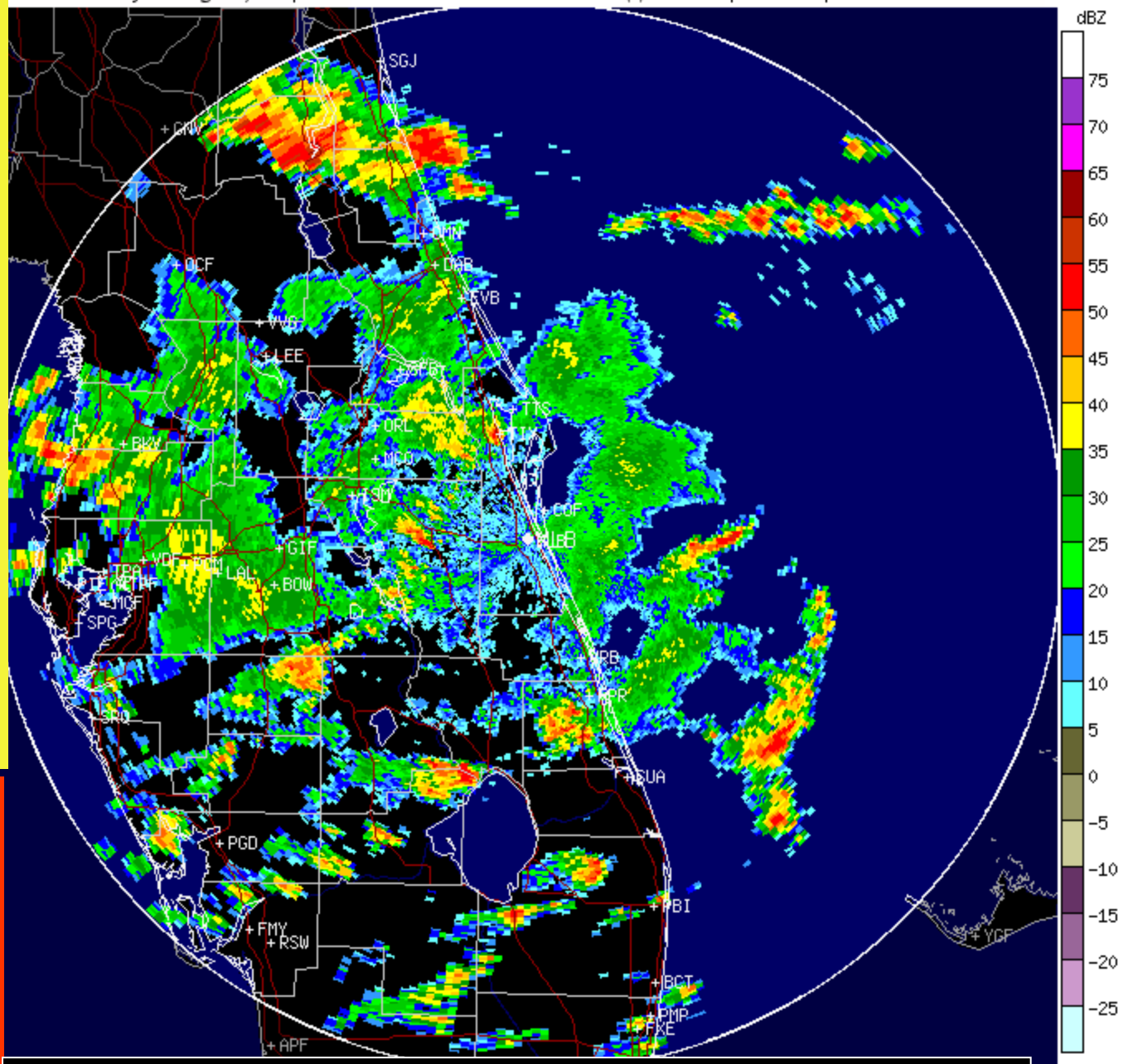
Orange 1.75 in/hr

(note – conversion depends on size, type of precip)

USSR experiment:
lots of raingages
on side of hill →
Rainfall can vary
even on a hillside!

KMLB -- Melbourne, FL
Base Reflectivity: 0.5 degrees, Precip Mode

20:10:03 UTC Tue 31 July 2007
(c) UCAR <http://www.rap.ucar.edu/weather/radar/>



www.ucar.edu – click on “weather” .. Radar – your area

A photograph of a laundry line in a yard. Several items of laundry, including white and yellow towels or sheets, are hanging on a clothesline. The yard is filled with tall, green grass. In the background, there are trees and a clear blue sky. The scene is brightly lit, suggesting a sunny day.

Does laundry dry faster in
summer or winter?

Can you dry clothes when
it's below freezing?

Can you save water
by allowing your grass
to grow?

Questions to talk about while sitting on the porch

- What are the 7 most important chemical or nuclear processes for the environment?
 - Hydrogen converted to Helium in the sun
 - Photosynthesis – plants taking up carbon dioxide, giving up oxygen
 - Decay – plants and animals releasing carbon dioxide and nutrients to the environment
 - The reactions that maintain and destroy the ozone layer
 - Chemical processes that maintain life in extreme environments
 - The chemical processes that clean the air we breathe
 - DNA replication
 - Mutation of genes (helps life to adapt to changing environments)

Other Activities:

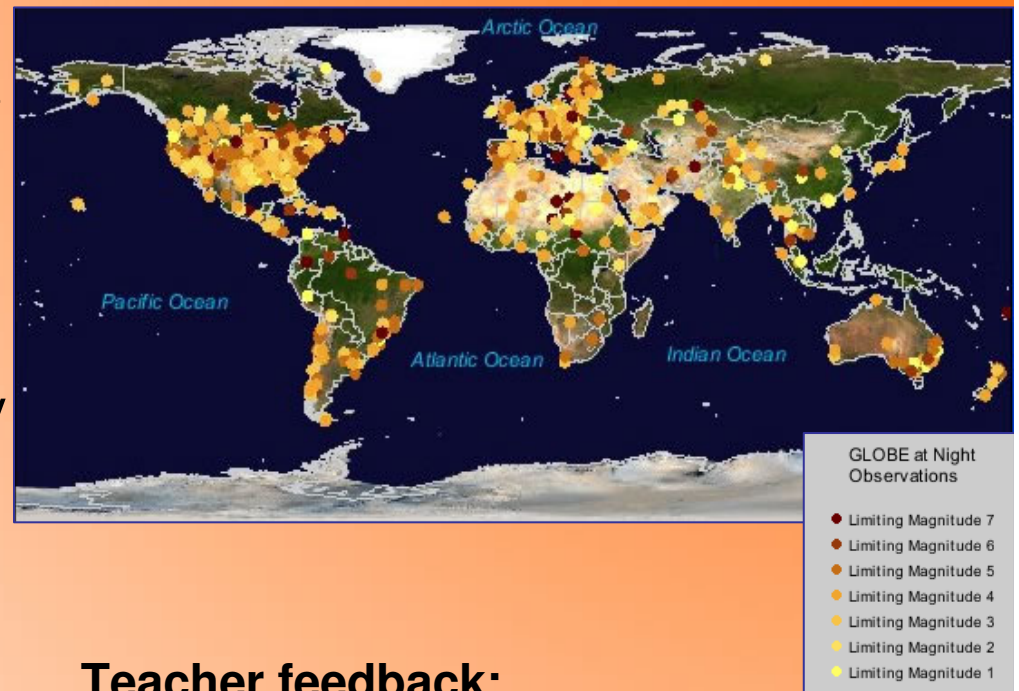
- On a road trip
 - See if cattle line up with the wind
 - Watch how the color of distant hills change as they get closer
- Keep A journal
 - Tell when birds arrive and how their numbers change with season and year
 - See what time the first snow and last snow are.
 - Think of questions to ask about the environment.
- Watch how changing light makes things look different at different times of day

HAVE FUN!

GLOBE at Night

2006 Event

- Over 18,084 people participated
- From 96 countries on six continents
- From all 50 U.S. States
- 4,591 observations reported
- Averaging 9,100 Web site hits a day
- Over 760 people on mailing list



Additional information:

Of people reporting data:

- 399 under 12 years old
- 949 between 12-14 years old
- 871 between 15-18 years old

Teacher feedback:

- 71% Announced in class
- 63% Handed out to students (3530 copies!)
- 24% Recruited science/other school clubs
- 31% Shared with other teachers
- 17% Contacted local media to publicize

Why are distant mountains blue? Will they be blue when we get there?

